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INVESTOR IN PEOPLE

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Signed

AT Evans

Dated

26 April 2004

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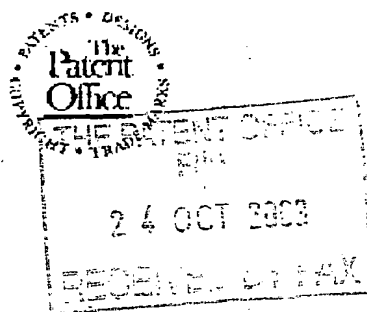
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Patents Form 1/77

Patents Act 1977
(Rule 16)

24 OCT 2003

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)24OCT03 E847195-1 D02820
P01/7700 0.00-0324862.2

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference

P03919GB

2. Patent application number

(The Patent Office will fill this part in)

0324862.2

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*Guy Darell UNWIN
Longdon Hall
Longdon
Tewkesbury
Gloucestershire GL20 6ASPatents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation

UK

08739625001

4. Title of the invention

FOOD HEATING

5. Name of your agent *(if you have one)*

LAURENCE SHAW & ASSOCIATES

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*1 Hagley Road
Edgbaston
Birmingham B16 8TGPatents ADP number *(if you know it)*

13623001 ✓

6. Priority: Complete this section if you are declaring priority from one or more earlier patent applications, filed in the last 12 months.

Country

Priority application number
*(if you know it)*Date of filing
(day / month / year)

7. Divisionals, etc: Complete this section only if this application is a divisional application or resulted from an entitlement dispute (see note B)

Number of earlier UK application

Date of filing
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8. Is a Patents Form 7/77 (Statement of inventorship and of right to grant of a patent) required in support of this request?

Answer YES if:

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

Otherwise answer NO (See note D)

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Patents Form 1/77

1 Patents Form 1/77

9. Accompanying documents: A patent application must include a description of the invention. Not counting duplicates, please enter the number of pages of each item accompanying this form:

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Continuation sheets of this form

Description 5

Claim(s) 2

Abstract

Drawing(s) 1

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for a preliminary examination and search (Patents Form 9/77)

Request for a substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature(s)

LAURENCE SHAW & ASSOCIATES

Date

24/10/03

12. Name, daytime telephone number and e-mail address, if any, of person to contact in the United Kingdom

Edward C Dowler

0121 454 4962

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Notes

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Agents ref: P03919GB

FOOD HEATING

The invention relates to heating food more particularly but not exclusively heating food by radiant heat apparatus, for example a bread toaster.

Patent specification no. WO 0100501 discloses a container for heating food in a radiant heat device such as a toaster. The container can be in the form of a flat pouch having an open mouth and made of woven fabric coated and/or impregnated with electrically non-conductive and heat resistant material. The material maybe polytetrafluorethylene or tetrafluoroethylene and the woven fabric may be woven glass or poly(p-phenyleneterephthalamide) strands. A sandwich or other foodstuff, baked beans for example, may be placed in the pouch and then inserted in a bread slot of an electric toaster. The toaster can then be switched on and this heats the food in the pouch. The pouch does not have to have an open mouth. For example, as shown in Figure 5 of specification no. WO 0100501, the pouch may comprise two panels made of glass mesh impregnated with polytetrafluorethylene and connected together and sealed all round by welded PFA tape. Within the pouch, as sold, there is a portion of food such as French fries. The food still in the pouch can be heated in a toaster or the like or in the oven.

According to one aspect of the present invention, there is provided a container for heating food, the container having at least one panel made of flexible multilayer film comprising layers of PFA and FEP on a core layer of PTFE.

According to a second aspect of the invention, there is provided a method of heating food wherein said food is provided in a container having at least one panel made of flexible multilayer film comprising layers of PFA and FEP on a core layer of PTFE, the

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method further comprising the application of heat to the food whilst it is within said container.

Preferably, the film comprises an outer layer of FEP.

In this specification, FEP means Fluorinated Ethylene Propylene and PFA means Perfluoralkoxy. PTFE means Polytetrafluorethylene.

The container has at least one tab or handle for removing the container from a heat applying device such as a toaster.

Preferably fluid-absorbing means are present inside the container, having hydrophilic and lipophilic properties to absorb excess moisture of fats produced by the food during heating. Such means may be attached or loosely placed within the container at its base.

Different means may be provided in order to alter the thermal conductivity of the container material. This may be necessary in circumstances where it is necessary to cook the centre of an article thoroughly, as generally the outer surface of the food cooks more quickly. The inside of the container preferably has a reflective external coating or layer of metal foil or wire. However, it is within the scope of the invention to alter the thermal conductivity of the container by varying the pigment colour of the material; for instance a white pigment will retard the heating process and a black pigment will aid the transfer of heat to the interior of the container.

The container may be sized so as to fit into a slot of a toaster, and of sufficient height to allow an adequate proportion of the container to project above the top of the toaster

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body in use, such that the user will not feel the heat of the container when removing it from the toaster.

The container may comprise a rectangular pouch sealed at three sides and with one open side for enabling the user to insert food such as a sandwich or baked beans to be heated. Alternatively, the pouch may be sealed on all sides and may contain a variety of foods for storage prior to sale, in order to form a range of convenience foods. The pouch may be provided with means for manual opening such as a draw string or tear strip provided on one or more sides, ideally at the top of the pouch as supported in the toaster. Such a range of convenience foods would be ideal for sale at garages, pubs and the like, where instant heating is paramount. Instead of a toaster, an alternative heating means may be used, for example an oven, an infra-red contact heating device, a grill or possibly even a microwave oven.

Advantageously, the container with foodstuffs therein is hygienically sealed within an outer wrapper.

The invention will now be described by way of example only with reference to the accompanying diagrammatic drawings, in which:

Figure 1 is a perspective view of one container of the invention;

Figure 2 is a perspective view of another container of the invention, and

Figure 3 is a section on part of the Figure 2 container.

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The container 1 of Figure 1 is made from a sheet of material which has been folded to form a rectangular pouch 2 closed at three sides and open at the fourth. The material comprises a flexible multilayer film with an inner or core layer 3 of PTFE, then a layer 4 of PFA on each side of the PTFE layer and then respective outer layers 5 of FEP on the PFA. A portion of one of the FEP layers and an included portion of the PFA layer are removed in Figure 1 so that part of the PTFE layer can be seen. After folding, the edges of the sheet are adhered at a central seam 14 and a lower edge 16 to form the pouch with two facing opposite walls 8 and 10. A slotted hole 12 is provided at the top of each wall. As an alternative, a projecting tab can be provided at the top of each wall.

A sandwich, beans, bacon or even scrambled egg mix may be placed in the pouch and the pouch then placed in the bread slot of an electrical bread toaster. The radiant heat from the toaster elements then cooks or heats the contents of the pouch.

The holes 12 form handles for retrieving the pouch from the toaster. The food to be cooked is placed in the container 1. In this case, the container 1 is accommodating a cheese sandwich (not shown) to be toasted. Fluid absorbing material (not shown) may be located in the bottom of the pouch to draw excess moisture and fats away from the sandwich allowing it more easily to brown.

The container 1 is generally formed from single sheet of material, by folding a strip in half and sealing the ends using heat and pressure to form a tube, and then securing one end of the tube to form a pouch.

To achieve optimum heating characteristics, the container walls could comprise PTFE which is pigmented or aluminised and/or a metallic foil or mesh could be incorporated (not shown).

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The embodiment of Figures 2 and 3 comprises a pouch 20 comprising two flexible walls 21 and 22 sealed all round the periphery of the pouch. A portion of food 23 (for example, French fries) is enclosed in the pouch 20. The walls 21 and 22 are made of flexible multilayer film with a core layer 24 of PTFE, two intermediate PFA layers 25 and two outer layers 26 of FEP. The FEP adheres to itself (and to the PTFE and the PFA) under heat and so forms an easily closable container. The walls 21 and 22 may be (but are not necessarily) of relatively low thickness (for example with a gauge of less than 150gm per square metre, or less than 100 or better less than 80, or even about 60 to 65 grams per square metre so that they are porous to steam emitted by the food in the pouch when heated, i.e. so they are gas permeable but do not let out appreciable liquid.

The walls 21 and 22 could be perforated to improve porosity. To hermetically seal or at least keep reasonably airtight, the food within the container 20, the latter could be supplied sealed inside an outer bag which is removed prior to heating.

The multilayer film comprising a base layer of PTFE, intermediate layers of PFA and outer layers of FEP is commercially available, for example from Chemfab corporation under the designation DF1700DB and DF1900DB.

Using the material described, a food item such as a sandwich can be simply wrapped in a sheet of the material and the wrapping sealed by known means such as a hot press or hot filament sealing device. Later the food item in its wrapping can be heated by a toaster for example.

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CLAIMS

1. A container for heating food in a radiant heat applying device, the container having at least one panel made of flexible multilayer film comprising layers of PFA and FEP on a core layer of PTFE.
2. A method of heating food, wherein said food is provided in a container having at least one panel made of flexible multilayer film comprising layers of PFA and FEP on a core layer of PTFE, the method further comprising the application of heat to the food whilst it is within said container.
3. A container according to any preceding claim, wherein the container has at least one tab or handle for facilitating removal of the container from the device.
4. A container according to any preceding claim, wherein fluid-absorbing means is present inside the container, having hydrophilic and lipophilic properties to absorb excess moisture or fats produced by the food during heating.
5. A container according to claim 1, adapted for being received in a bread slice receiving slot of an electric bread toaster.
6. A container according to any preceding claim, comprising two panels formed as a pouch sealed all around the periphery of the pouch.
7. A container according to any of claims 1 to 5, comprising two panels formed as a pouch sealed around a part of the periphery of the pouch to leave an open mouth for receiving said food.

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8. A container according to any preceding claim containing foodstuff and hygienically sealed within an outer wrapper.

ECD/JW/P03919GB
October 24, 2003

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